

Audit and assessment of undergraduate teaching at Tsinghua University

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An introduction

I graduated from National Tsinghua University in Taiwan in 1972. There were no graduates from Tsinghua University in Beijing that year. As a result, the students in the graduating class I was part of could be called distant relatives as well as the only graduating class that year in the history of Tsinghua.

I was invited by the Ministry of Education in the PRC government to conduct an audit and assessment of Tsinghua University's undergraduate teaching between 6 and 9 November this year. In addition to talks with some of the administrators at Tsinghua, such as President Qiu Yong, Professor Chen Xu, the Party Secretary, Vice-President Yang Bin and Vice-President Ji Junmin, I interacted with professors and students during visits to the Department of Engineering Physics, Department of Industrial Engineering, School of Economics and Management, and Academy of Arts and Design.

I also had the opportunity to attend a few classes, tour labs and observe ongoing experiments. What's more, I visited students on the Schwarzman Scholars programme and toured Nuctech located in Miyun District in Beijing; the Tsinghua Science Park; and the i-Center on the Tsinghua campus. These experiences helped me to get a grip of knowledge transfer activities at Tsinghua. I was also very impressed by a visit to the thought-provoking History Museum and the Art Museum with its huge collection on Tsinghua campus.

Tsinghua University inherited an excellent tradition of governance and lives up to its outstanding reputation in academic leadership. Defined as a comprehensive university, Tsinghua aims to become a top international university by 2020 under the leadership of President Qiu, and to be ranked at the front of the top universities by 2030 and become the best of the best by 2050.

Indeed, I believe Tsinghua will be ranked among the top 10 universities in the world by 2050. To do so, three elements are essential: hardware, software and soulware. In other words, emphasis should be given to the building of proper soulware, i.e. a professional academic mind-set and academic ethics, in addition to the building of tangible hardware and software. Ranking is conducted in a comprehensive manner, taking into consideration concrete benchmarks as well as intangible impressions, giving due recognition to elements such as research promotion, social impact, cultivation of talent, and contribution to society.

Teaching, research and service

The impact that Tsinghua has had on undergraduate education over the past 100

years is widely acknowledged, and similarly President Qiu deserves his reputation as “the president for undergraduates”. He notes the importance of liberal arts education and the integration of general education and professional disciplines. I sat in on a “nuclear radiation physics and detection” class and was impressed at how Vice-President Professor Yang used apps in an innovative way to encourage mutual and even multiple exchanges. The use of apps among Tsinghua teachers is very common, denoting the extent to which the high calibre – Tsinghua teachers pay heed to undergraduate education.

Tsinghua University has a strong research culture, and it aims to catch up with the most advanced institutions in the world. In some areas, it is actually very advanced, as indicated in the publication of high-quality academic papers. In addition to the usual research output by professors and graduate students in terms of academic papers, professional books and designs, Tsinghua’s undergraduates are known for their exchange at top overseas universities. What’s more, Tsinghua undergraduates are the first authors on more than 200 academic papers.

The success of research and development at Tsinghua Science Park and the iCenter reflects what Tsinghua has achieved in undergraduate education. These achievements are to be commended as they are rare, even in Europe and the US. For example, Nuctech is a great example of the peaceful use of nuclear energy, and stands as the embodiment of how a university can contribute to global transportation and security inspection. Tsinghua University had the foresight to establish Nuctech 30 years ago, despite all kinds of difficulties. Due to its excellent performance in the integration of industry, academia and research as well as its research and development, today Nuctech records an annual revenue of ¥3.8 billion (\$572 million), with a 15% profit. In addition, it provides Tsinghua faculty and students, as well as students from other universities, with opportunities for study, communicate and research.

Observation and suggestions

The current “Audit and assessment of undergraduate teaching” serves to aid Tsinghua University with its self-audit, rather than serving as a comparison of Tsinghua with other universities.

One point to mention is that the credit requirements for undergraduates is still a bit too high even though the university has recently reduced that number to 170 points. I think curriculum content should be evaluated regularly and it should be emphasised that more doesn’t necessarily mean better. Moreover, more academic and flexible learning that incorporates research and discovery would be more important. On top of promoting theories, imparting knowledge and answering queries, more emphasis should be given to research, or the study of nature’s phenomena to seek new knowledge. Tsinghua students are extremely gifted and possess a strong desire for learning. The university should and can retire courses that only impart knowledge

and allow more room for exploration and research and greater flexibility when selecting courses. Only by doing well in the “integration of teaching and research” can innovation and creativity be inspired.

Strictly speaking, Tsinghua is blessed with adequate hardware and space, but there were still comments about the lack of resources during the conversation. Not knowing the details, I can't comment. But similar problems are found in universities elsewhere in the world. The solution is often enhanced communication. It is relatively easy to regularly audit and assess whether or not existing spacial facilities are being used efficiently. Assessment benchmarks should be established, against which an individual unit's performance can be evaluated according to the strategic plans set by the university; and the use of resources and space can be increased or decreased. In doing so, some of the concerns may be addressed. Concerns regarding insufficient supply of faculty in some of the schools and departments can also be addressed through communication and consolidation according to the university's strategic plans.

The traditional tutorial system at Tsinghua works very well. While general education has its own merits, professional education has its own unique purpose. How to select and combine the two remains to be explored. Following trends blindly or overcorrecting should be avoided. The best way to cultivate talent should be explored according to each institution's unique features.

While visiting the Academy of Arts & Design, Professor Wang entertained us with aged Pu'er tea. I commented on how he followed an established tea-serving ritual down to every detail. He acknowledged my observation with a smile. It seems to prove the saying that “artists stick to routines and scientists emphasise aesthetics”.

There is great truth in Nature. “A path-breaking Tsinghua adds glory to China”.

My assessment would have been more thorough had I not been slightly ill at the time, but nevertheless my blessings for Tsinghua are truly sincere.